

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

1.9
F7625T
copy 2

LIBRARY
FEB 18 1959
U.S. DEPARTMENT OF AGRICULTURE

TECHNICAL NOTES

LAKE STATES FOREST EXPERIMENT STATION
U.S. DEPARTMENT OF AGRICULTURE . . . FOREST SERVICE

No. 549

Needle Droop of Red Pine

During the 1956 and 1957 growing seasons, moderate to severe needle-droop symptoms were noted on numerous red pine plantations in the Lake States. In 1958 no new damage from this disease was observed.

Needle-droop symptoms develop when the cells at the base of the needle fascicle collapse. They may be produced on red pine by a number of different conditions, biotic or environmental or both. These conditions are:

1. Lack of available moisture. Environmental conditions such that the transpiration rate of the trees is high and the available moisture is low will cause the needles to droop and die. Red pine planted on open sandy sites with a dense ground cover of herbaceous plants or with a heavy sod seem most susceptible to this injury.
2. Frost. Red pine is more susceptible to summer frosts than any other conifer. Trees planted in frost pockets or depressions are often injured and show needle-droop symptoms while those on the slopes are not damaged.
3. Insects. A gall midge (Thecodiplosis) has been reported to oviposit at the base of red pine needles in late spring or early summer, causing the needles to collapse. When the injury is caused by insects, the condition is usually referred to as "needle blight."
4. Fungi. A species of Pullularia has been reported which, in conjunction with the gall midge, can produce the needle-droop symptom.
5. Other causes. Needle-droop symptoms have been observed where none of the above conditions seem to exist. The cause or causes of the injury under these circumstances need to be studied.

A plantation in north central Minnesota in which needle-droop symptoms were present was studied. The following tabulation summarizes the observations:

Number of trees observed.....	500
Percent of trees with needle-droop symptoms...	89.0
Percent of trees with dead terminal.....	47.0
Average number of dead buds per tree.....	1.7

The above plantation was on an open sandy site with a dense ground cover of Carex, Poa, Equisetum, Rosa, and Comptonia species. Injury in this plantation probably occurred in the fall of 1955. None of the trees in this plantation have been killed, but all of the trees with dead terminal buds have lost 3 years' height growth and are deformed at this time. No injury was noted on jack pine in the same plantation.

(Over)

Previous reports of needle droop have indicated that damage is usually limited to loss of the affected needles. The extensive bud mortality noted in 1956 and 1957 caused more severe damage than is usually attributed to this type of symptom. In the Upper Peninsula of Michigan severe symptoms were also noted in depressions in some plantations. In these cases there was almost 100-percent mortality of the affected trees.

January 1959

NEIL A. ANDERSON, Plant Pathologist